COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Valley Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

Frederick County Regional Landfill
Frederick County, Virginia
Permit No. VRO81312

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Article 1, Frederick County has applied for a renewal of the Title V Operating Permit for its landfill in Frederick County, Virginia. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Engineer/Permit Contact:_____ Date: 09/01/04

Air Permit Manager:_____ Date: 09/01/04

Deputy Regional Director:_____ Date: 09/01/04

FACILITY INFORMATION

Permittee
Frederick County
107 N. Kent Street
Winchester, Virginia 22601-5000

Facility
Frederick County Regional Landfill
280 Landfill Road
Frederick County, Virginia

Plant Identification Number: 51-139-0127

SOURCE DESCRIPTION

SIC Code 4953 –Refuse Systems

The Frederick County Regional Landfill is a municipal solid waste (MSW) management facility. The landfill accepts household and commercial waste, construction/demolition/debris (CDD) and sludge. The site includes an active landfill located south of Route 655 (Permit No. 529), a closed landfill south of the active landfill and west of Opequon Creek (Permit No. 40), and a CDD landfill located southwest of the closed landfill (Permit No. 591). The parcels containing these three waste management units are contiguous, county-owned property, hence all three landfills are considered as a single disposal facility.

The permitted design capacity of the Frederick County Regional Landfill was increased to greater than 2.5 million m^3 and 2.5 million Mg after May 30, 1991 (See Attachment A). Therefore, the landfill is regulated according to New Source Performance Standards (NSPS) Subpart WWW. As stated in 40 CFR §60.752(b), landfills above the 2.5 million m^3 and 2.5 million Mg design capacity are subject to Title V permitting requirements.

The existing Title V permit for the facility was issued on September 30, 1999 and expires on September 30, 2004. The existing Title V permit allows operation of the regional landfill which includes an active landfill (Solid Waste Permit 529), a closed landfill (Solid Waste Permit 40), and a Construction and Demolition Debris (CDD) landfill (Solid Waste Permit 591). This source is located in an attainment area for all pollutants. The facility is currently permitted under a minor NSR permit dated March 24, 2003.

On November 14, 2003, the facility's Solid Waste Permit (Permit No. 529) was amended to increase

the vertical height. The facility has submitted amended design capacity report on January 9, 2004. This report indicated that the design capacity of the active landfill (Permit No. 529) will be increased from 5.9 million m^3 to 11.79 million m^3 (15.423 million yd^3). The facility was advised to obtain the minor new source review permit for this increase in design capacity. This increase in design capacity of the active landfill (Permit No. 529) is not reflected in this renewed permit yet. However, this increase in design capacity of the active landfill (Permit No. 529) will be incorporated in Title V Permit at a future date after the issuance of the minor new source review permit.

COMPLIANCE STATUS

The facility is inspected once a year. The facility was last inspected on August 28, 2003, and was determined to be in compliance.

CHANGES TO EXISTING TITLE V PERMIT

As part of the ongoing capping activities at Solid Waste Permit 529, the facility constructed the initial phase of a landfill gas (LFG) collection system in 1999. In August 2000, this collection system was connected to an active blower/flare station. It is important to note that this LFG collection system was installed by the facility on its own and is not required under NSPS Subpart WWW. The blower/flare station is comprised of two 3-stage Model 4203A Hoffman blowers and an 8-inch LFG Specialties utility flare rated at a maximum flow of 1,362 standard cubic feet per minute (scfm). Frederick County submitted an air permit application on November 22, 2002 for the LFG Specialties utility flare installed in August 2000. On March 24, 2003, DEQ issued a minor NSR permit to construct and operate the utility flare. The proposed Title V permit incorporates the new applicable requirements from the March 24, 2003 permit.

The following changes have been made to the existing Title V permit:

III. Landfill Requirements:

Condition B.1 – The facility determined on May 28, 2002 that the new site-specific NMOC concentration (C_{NMOC}) is 110 parts per million by volume as hexane. This condition is modified to change the site-specific C_{NMOC} from 231 to 110 parts per million by volume as hexane.

Condition D.2 – The facility determined the site-specific nonmethane organic compound (NMOC) concentration on May 28, 2002 and satisfied this condition. This condition is modified to indicate that the next due date for retesting the site-specific NMOC concentration is May 28, 2007.

Condition D.3 – This condition is modified to indicate that the recent five-year estimates were submitted on March 19, 2003.

Conditions D.4 and D.5 – These conditions are added to the permit as these are also applicable requirements.

IV. Fuel Burning Equipment:

This section has been added to incorporate new applicable requirements from the minor NSR permit dated March 24, 2003.

V. Facility Wide Conditions:

Condition D.1 – This condition is modified to indicate that the facility had already submitted a Dust Control Plan. DEQ approved the plan on January 18, 2000.

VI. Insignificant Emission Units:

Landfill gas fueled heaters have been added to insignificant emission units to reflect the current application.

VIII. General Conditions:

The language of seven general conditions (Section VIII) has been updated to reflect current boilerplate format. Conditions changed are VIII.B, C, D, E, F, J and U. Also, Condition VIII. Y has been added to reflect the current boilerplate.

EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following :

Table I. Significant Emission Units

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device Description (PCD)	PCD ID	Pollutant Controlled	Applicable Permit Date
Landfills							
EU-1	F-1	Closed MSW Landfill Solid Waste Permit No. 40	1.4 Million Megagrams	-	-	-	-
EU-2	F-2	Active MSW Landfill Solid Waste Permit No. 529	5.9 Million m^3	-	-	-	-
EU-3	F-3	CDD Landfill Solid Waste Permit No. 591	4.7 Million yd^3	-	-	-	-
Landfill Surface and Roads							
EU-4	F-4	Landfill Surface and Roads	-	-	-	-	-
Fuel Burning Equipment							
PCD-1	F-5	8-inch Utility Flare	40.9 MMBtu/hr	-	-	NMOC and VOC	03/24/03

* The Size/Rated capacity is provided for informational purposes only, and is not an applicable requirement.

EMISSIONS INVENTORY

A copy of the 2003 annual emission update is attached as Attachment B. Emissions are summarized in the following tables:

Table II. 2003 Actual Criteria Pollutant Emissions

	Criteria Pollutant Emission in Tons/Year				
Emission Unit	VOC	CO	SO_2	PM-10	NO_x
EU-1	1.02	-	-	-	-
EU-2	0.59	-	-	-	-
EU-3	0.09	-	-	-	-
EU-4	-	-	-	10.8	-
PCD-1	0.01	11.18	0.23	0.50	2.06
Total	1.71	11.18	0.23	11.30	2.06

Table III. 2003 Actual Hazardous Air Pollutant (HAP) Emissions

Pollutant	Hazardous Air Pollutant Emission in Tons/Year
Total HAPs	4.23

EMISSION UNIT APPLICABLE REQUIREMENTS - (EU1, EU2 and EU3)

Limitations

Frederick County Regional Landfill is subject to 40 CFR 60 Subpart WWW - New Source Performance Standards (NSPS) for Municipal Solid Waste Landfills. Being subject to the NSPS means that Frederick County Landfill is also subject to 40 CFR 60 Subpart A. All applicable limitations from Subpart A and WWW have been included in the permit. Since the NMOC emission rate is less than 50 Mg/yr, limitations requirements related to a collection and control system have not been incorporated into the permit. However, a condition requiring the facility to submit a collection and control design plan and install a collection and control system in compliance with 40 CFR §60.752(b)(2) if the NMOC emission is equal to or greater than 50 Mg/yr, has been incorporated into

the permit. The facility's only applicable requirements at this time are monitoring, recordkeeping and notification.

Monitoring and Recordkeeping

As per 40 CFR Part 64 Compliance Assurance Monitoring (CAM), emission limitations or standards proposed after November 15, 1990 pursuant to section 111 or 112 are exempt from CAM (40 CFR §64.2(b)(1)). All applicable monitoring requirements from Subpart WWW have been included in the permit. Since Subpart WWW was promulgated on March 1996 under the authority of Section 111 of New Source Performance Standards (NSPS), this standard is exempt from CAM requirements and no additional monitoring has been incorporated into the Title V permit

The NSPS Subpart WWW requires the permittee to maintain records including the design capacity of the landfill, the current amount of solid waste in place, and the year-by-year waste acceptance rate. These requirements have been incorporated in the permit. Also, the permit requires the calculation of the NMOC emission rate using the procedures described in NSPS subpart WWW.

Actual emissions from the operation of the landfill shall be calculated using either of the following equations (Equation 1 or 2):

$$M_{NMOC} = \sum_{i=1}^{n} 2kL_O M_i (e^{-kt_i})(C_{NMOC})(3.6x10^{-9})$$

……..Equation 1

M_{NMOC}	= total NMOC emission rate from the landfill, megagrams per year
k	= methane generation rate constant, year $^{-1}$
L_O	= methane generation potential, cubic meters per megagram solid waste
M_i	= mass of solid waste in the i^{th} section, megagrams
t_i	= age of the i^{th} section, years
C_{NMOC}	= concentration of NMOC, parts per million by volume as hexane
$3.6x10^{-9}$	= conversion factor

The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value for M_i if documentation of the nature and amount of such wastes is maintained.

$$M_{NMOC} = 2L_O R(e^{-kc} - e^{-kt})(C_{NMOC})(3.6x10^{-9})$$

……..Equation 2

M_{NMOC}	= mass emission rate of NMOC from the landfill, megagrams per year
L_O	= methane generation potential, cubic meters per megagram solid waste
R	= average annual acceptance rate, megagrams per year
k	= methane generation rate constant, year $^{-1}$
t	= age of the landfill, years
C_{NMOC}	= concentration of NMOC, parts per million by volume as hexane
c	= time since closure, years (for an active landfill c = 0 and e^{-kc} = 1)
$3.6x10^{-9}$	= conversion factor

The mass of nondegradable solid waste may be subtracted from the average annual acceptance rate when calculating a value for R, if documentation of the nature and amount of such wastes is maintained.

Reporting Requirements

The NSPS Subpart WWW contains requirements for reporting annual and/or five-year estimates of the NMOC emissions depending upon the estimation of the NMOC emission rate. These requirements have been incorporated in the permit. Since the NMOC emission rate is less than 50 Mg/yr, reporting requirements related to the collection and control system have not been incorporated into the permit. However, a condition requiring the facility to submit a collection and control design plan and install a collection and control system in compliance with 40 CFR §60.752(b)(2) if the NMOC emission is equal to or greater than 50 Mg/yr, has been incorporated into the permit.

Compliance Assurance Monitoring (CAM)

The CAM plan does not apply to the MSW landfill as this landfill is subject to emission limitations in New Source Performance Standards (NSPS) proposed after November 15, 1990. This landfill is subject to NSPS Subpart WWW that was effective on March 1996.

Testing

The permit requires testing of the site-specific NMOC concentration using the procedures described in NSPS subpart WWW. Also, a test method to develop a site-specific methane generation rate constant is provided in the permit, if needed.

Streamlined Requirements

The following requirements associated with 40 CFR Part 60 have not been included in the permit because the source has already completed the requirements:

40 CFR §60.7 (a) (1) - Requirements of the Notification of the Date Construction is Commenced

The initial design capacity report submitted on September 24, 1996 fulfilled this requirement as per 40 CFR §60.757(a)(1).

40 CFR §60.757 (a) - Initial Design Capacity Submittal Requirement

On September 24, 1996, the facility submitted the initial design capacity report. The report is shown in Attachment A.

40 CFR §60.757 (b) - Initial Nonmethane Organic Compounds (NMOC) Emission Rate Report Requirement

On July 25, 1997, the facility submitted an NMOC emission rate report. As per the report, the 1997 NMOC emission estimate for the landfill was 294 Mg/yr. Since the NMOC emission rate exceeded 50 Mg/yr, the facility was required to determine a site-specific NMOC concentration and recalculate the NMOC emissions estimate under Tier 2 procedures **or** submit a collection and control system design plan prepared by a professional engineer within one year of the report and comply with 40 CFR §60.752 (b) (2). The facility notified DEQ that Tier 2 sampling would be done and revised NMOC emissions estimate would be submitted within 180 days.

40 CFR §60.757 (c)(1) - Nonmethane Organic Compounds (NMOC) Emission Rate Report Requirement under Tier 2 sampling

On August 22, 1997, the facility determined the site-specific NMOC concentration and recalculated the NMOC emissions rate. The revised Tier 2 NMOC emission rate report was submitted on October 15, 1997. As per the report, the 1997 NMOC emission estimate for the landfill was 17 Mg/yr. Since the NMOC emission rate is under 50 Mg/yr, the facility is not required to submit a collection and control system design plan at this time. The facility retested the site-specific NMOC concentration and recalculated the NMOC emissions rate on May 28, 2002. The NMOC emission rate was again updated and submitted on March 19, 2003. A copy of the report is shown in Attachment C.

EMISSION UNIT APPLICABLE REQUIREMENTS - (PCD-1)

Limitations

The following limitations are state BACT requirements from the minor NSR permit issued on 03/24/03. Please note that the condition numbers are from the minor NSR permit. A copy of the permit is attached as Attachment D.

Condition 4: Approved fuel for the utility flare is landfill gas.

Condition 5: Fuel throughput for the utility flare.

Condition 6: Operating and training procedures.

Condition 7: Emission limits for criteria pollutants.

Condition 8: Visible emission limit for the utility flare.

Monitoring and Recordkeeping

The monitoring and recordkeeping requirements in Condition 9 of the NSR permit have been included in Title V permit.

The permit includes requirements for maintaining records of all emission data and operating parameters. These records include yearly landfill gas (LFG) consumption (in cubic feet) by the utility flare.

The hourly and annual emission limits established for the utility flare are based on the capacity of the utility flare. Therefore, if the utility flare is operated at capacity, or below, there should not be a violation of the hourly and annual emission rates. Calculations have been included in Attachment E to demonstrate how the limits are obtained. As long as the utility flare is operated properly, it can be assumed that the emission limitations will not be violated. Maintenance of records demonstrating that the operators have been properly trained along with the maintenance of operating procedures will ensure compliance with the emission limitations and satisfy the periodic monitoring requirements.

Actual emissions of NO_x and CO from the operation of the utility flare will be calculated using the following equation:

$$E = F \times N$$

..... Equation 3

Where:

E = Emission Rate (lb/time period)

F = Pollutant specific emission factors as follows:

NO_x = 0.068 lb/MMBtu
CO = 0.37 lb/MMBtu

N = Heat release from the utility flare (MMBtu/hr)

Actual emissions of PM and PM-10 from the operation of the utility flare will be calculated using the following equation:

$$E = A \times F \times H \times B$$

..... Equation 4

Where:

E = Emission Rate for PM and PM-10 (lb/time period)
A = Average Firing Rate of LFG (cfm)
F = Pollutant specific emission factors = 0.001 lb/hr-cfm CH_4
B = Conversion factor (0.5 cfm CH_4 / 1 cfm LFG)

Actual emissions of VOC from the operation of the utility flare will be calculated using the following equation:

$$E = A \times F \times H \times B$$

..... Equation 5

Where:

E = Emission Rate for VOC (lb/time period)
A = NMOC Input to Flare (lb/time period), NMOC is calculated using LandGEM model
F = 0.39 (39% of NMOC assumed to be VOC)
B = 0.02 (VOC destruction efficiency of 98 % based on manufacturer's recommendation)

Actual emissions of SO_2 from the operation of the utility flare will be calculated using the following equation:

$$E = A \times F \times H \times B \times C$$

..... Equation 6

Where:

E = Emission Rate for SO_2 (lb/time period)
A = 2.0 (conversion factor from TRS to SO_2)
F = Flow rate of LFG (ft^3/time)

B	=	0.5 (LFG is assumed to be 50% methane)
C	=	TRS concentration in LFG

There is no monitoring for the visible emission limit. Compliance with the visible emission limit was demonstrated by testing performed on May 16, 2003. This test showed that the opacity was 0%. As long as the flare is operated properly, it can be assumed that the opacity limitations will not be violated. The maintenance of records demonstrating that the operators have been properly trained along with the maintenance of operating procedures will ensure compliance with the opacity limitation and satisfy the periodic monitoring requirements.

Compliance Assurance Monitoring (CAM)

CAM does not apply to the utility flare because the flare does not use a control device to achieve compliance with the emission limitations.

Testing

The permit includes the requirement in Condition 3 of the minor NSR permit that the permitted facility shall be constructed so as to allow for emission testing upon reasonable notice at any time, using appropriate methods.

The permit does not require source emission tests. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

No specific reporting has been included in the permit.

Streamlined Requirements

The following applicable requirements have not been included for the reasons provided:

Conditions 10 and 11 of the minor NSR permit dated 3/24/03

These condition have not been included as these conditions have been already completed. The visible emissions evaluation was performed on May 16, 2003.

Condition 12 of the minor NSR permit dated 3/24/03

This condition has not been included as this requirement is already included in the General Conditions Section of the Title V permit (Condition VIII.F).

The remaining general conditions of the minor NSR permit have been modified to meet the general condition requirements of 40 CFR Part 70 and 9 VAC 5-80-110.

EMISSION UNIT APPLICABLE REQUIREMENTS - (Facility Wide)

Limitations

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-50-80 - Standard for visible emissions
9 VAC 5-50-90 - Standard for fugitive dust/emissions

Also, the facility is required to develop a Dust Control Plan with good written operating procedures.

Monitoring and Recordkeeping

In lieu of conducting periodic evaluations using EPA Method 9 to demonstrate compliance with the facility wide visible emission limit, the permittee shall perform a daily visual survey of the trafficable roads at the site and landfill activities for sources of excessive emissions. The reason for not requiring EPA Method 9 is that there is no stack in the landfill to perform the test. The presence of excessive emissions shall require further investigation as to the cause of the emissions and timely corrective action shall be required. All observations and corrective actions taken shall be logged and recorded. These records shall be available on site for inspection by the DEQ and shall be current for the most recent five (5) years.

There is reasonable assurance that violations of the visible emission standards should not occur if the permittee complies with the permit condition to mitigate fugitive dust, implements the operating procedures included in the dust control plan, performs a daily visible emission survey and conducts timely corrective actions as needed.

Compliance Assurance Monitoring (CAM)

CAM does not apply to the landfill surface and roads because the landfill surface and roads do not use a control device to achieve compliance with the emission limitations.

Testing

The permit does not require source emission tests. A table of test methods has been included in the permit if further testing for compliance purposes is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

No specific reporting has been included for the landfill surface and roads.

Streamlined Requirements

There are no streamlined requirements for the landfill surface and roads.

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110 that apply to all Federal operating permit sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions, including those caused by upsets, within four daytime business hours after discovery.

STATE ONLY APPLICABLE REQUIREMENTS

Frederick County did not identify any state-only requirements in their application and all requirements in their minor NSR permits are federally enforceable. Therefore, no state-only requirements have been included in the permit.

FUTURE APPLICABLE REQUIREMENTS

Since the NMOC emission rate is less than 50 Mg/yr, limitations requirements related to the collection and control system have not been incorporated into the permit. However, a condition requiring the facility to submit a collection and control design plan and install a collection and control system in compliance with 40 CFR §60.752(b)(2) if the NMOC emissions are equal to or greater than 50 Mg/yr, has been incorporated into the permit. The facility's only applicable requirements at this time are monitoring, recordkeeping and notification.

INAPPLICABLE REQUIREMENTS

40 CFR 63 Subpart AAAA, National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills, is not an applicable requirement for the Frederick County Regional Landfill. This is because this facility is not (1) a major source of HAP; (2) collocated with a major source of HAP; (3) an area source with a design capacity greater than or equal to 2.5 million m^3 and 2.5 million Mg with estimated uncontrolled NMOC emissions equal to greater than 50 Mg/yr; or (4) an active area source landfill with a design capacity greater than or equal to 2.5 million m^3 and 2.5 million Mg that operates an anaerobic bioreactor.

COMPLIANCE PLAN

The facility is currently in compliance with all applicable requirements. No compliance plan was included in the application or in the permit.

INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Table IV. Insignificant Emission Units

Emission Unit No.	Emission Unit Description	Citation[1] (9 VAC_)	Pollutant(s) Emitted (5-80-720 B)	Rated Capacity (5-80-720 C)
EU-5	Leachate Lagoon	5-80-720 B	VOC	-
EU-6	Compost Chipper	5-80-720 B	NO_x, CO, SO_2, PM-10, VOC	-
EU-7	Tire Chipper	5-80-720 B	NO_x, CO, SO_2, PM-10, VOC	-
EU-8	Fuel Storage Tanks	5-80-720 B	VOC	-
EU-9	Landfill Gas Fueled Heaters	5-80-720 B	NO_x, CO, SO_2, PM-10 and VOC	-

[1]The citation criteria for insignificant activities are as follows:

9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application
9 VAC 5-80-720 B - Insignificant due to emission levels
9 VAC 5-80-720 C - Insignificant due to size or production rate

CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. Therefore, all portions of the Title V application are suitable for public review.

PUBLIC PARTICIPATION

A public notice regarding the draft permit was placed in the Winchester Star, Winchester, Virginia, on July 13, 2004. EPA was sent a copy of the draft permit and notified of the public notice on July 12, 2004. West Virginia, the only affected state, was sent a copy of the public notice in e-mail dated July 12, 2004. All persons on the Title V mailing list were also sent a copy of the public notice in e-mail dated July 12, 2004.

Public comments were accepted from July 13, 2004 to August 12, 2004. No comments were received from the public, the affected state and the EPA regarding the draft permit.

ATTACHMENTS

The following information is attached:

ATTACHMENT A: Design Capacity Report

ATTACHMENT B: 2003 Annual Emissions Update

ATTACHMENT C: NMOC Emission Report

ATTACHMENT D: Minor New Source Review Permit dated 03/24/03

ATTACHMENT E: Emission Calculations for the Utility Flare

ATTACHMENT A

Design Capacity Report

ATTACHMENT B
2003 Annual Emissions Update

ATTACHMENT C
NMOC Emission Report

ATTACHMENT D
Minor NSR Permit dated 03/24/03

ATTACHMENT E
Emission Calculations for the Utility Flare